

Amendments to the Claims:

A listing of the entire set of pending claims (including amendments to the claims, if any) is submitted herewith per 37 CFR 1.121. This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (Currently Amended) A master substrate comprising a substrate layer and a recording stack deposited on the substrate layer, the recording stack comprising:

an information layer, said first information layer comprising a growth-dominated phase-change material for forming marks and spaces representing an encoded data pattern,

a first interface layer sandwiched between said information layer and the substrate, ~~said first information layer comprising a growth-dominated phase-change material for forming marks and spaces representing an encoded data pattern,~~

wherein said recording material is an alloy comprising at least two materials of the group of materials containing Ge, Sb, Te, In, Se, Bi, Ag, Ga, Sn, Pb, As, and

a second interface layer acting as a barrier to etching, said second interface layer being sandwiched between said information layer and the substrate,

wherein the recording stack further comprises a protection layer adjacent the information layer at a side most remote from the substrate wherein said protection layer comprises an organic material, ~~in particular selected from the group Diazonaphthoquinone-based photoresists, and~~

a metal heat sink layer sandwiched between said substrate layer and said first interface layer or second interface layer.

2. (Original) A master substrate as claimed in claim 1, wherein said recording material is a Sb-Te alloy material, ~~in particular Sb₂Te doped with Ge and In.~~

3. (Currently Amended) A master substrate as claimed in claim 1, wherein said recording material is a Sn-Ge-Sb-alloy material, ~~in particular with the composition Sn_{18,3}-Ge_{12,6}-Sb_{69,2}.~~

4. (Previously Presented) A master substrate as claimed in claim 1, wherein said information layer has a thickness in the range from 2 nm to 100 nm, preferred range 1 ranges between 5 and 40 nm, preferred range 2 ranges between 45 and 70 nm.

5. (Currently Amended) A master substrate as claimed in claim 1, wherein said first interface layer is made of a material of the group of dielectric materials containing ZnS-SiO₂, Al₂O₃, SiO₂, Si₃N₄.

6. (Currently Amended) A master substrate as claimed in claim 1, wherein said first interface layer comprises at least one organic dye selected from the group phthalocyanine, cyanine and AZO dyes.

7. (Currently Amended) A master substrate as claimed in claim 1, wherein said first interface layer comprises an organic layer selected from the group UV-cured organic materials, preferably hexandiol diacrylate (HDDA).

8. (Currently Amended) A master substrate as claimed in claim 1, wherein said first interface layer has a thickness in the range from 5 nm to 100 nm, ~~in particular between 20 and 70 nm.~~

9. (Cancelled)

10. (Currently Amended) A master substrate as claimed in claim 1 ~~[[9]]~~9, wherein said protection layer has a thickness between 2 and 50 nm, ~~in particular between 5 and 30 nm.~~

11. (Currently Amended) A master substrate as claimed in claim 1 ~~[[9]]~~, wherein said protection layer is made of the group materials containing ZnS-SiO₂, Al₂O₃, SiO₂, Si₃N₄, Ta₂O₅, SiC.

12. (Currently Amended) A master substrate as claimed in claim 1 ~~[[9]]~~, wherein said protection layer comprises an organic material, in particular selected from the group Diazonaphthoquinone-based photoresists ~~or from the group soluble organic materials, like PMMA.~~

13. (Cancelled)

14. (Previously Presented) A master substrate as claimed in claim 1, wherein said second interface layer has a thickness between 10 and 100 nm, ~~preferably between 15 and 50 nm.~~

15. (Canceled)

16. (Original) A master substrate as claimed in claim 15, wherein said metal heat sink layer (83) has a thickness larger than 5 nm, in particular larger than 15 nm.

17. (Currently Amended) A master substrate as claimed in claim [15] 1, wherein said metal heat sink layers comprises a material selected from the group of materials Al, Ag, Cu, Ag, Ir, Mo, Rh, Pt, Ni, Os, W and alloys thereof.

18. (Previously Presented) A method of manufacturing a stamper for replicating a high-density relief structure comprising at least the steps of :

illuminating a master substrate as claimed in claim 1 with a modulated focused radiation beam,

rinsing the illuminated master substrate layer with a developer, being one of an alkaline or an acid liquid, preferably selected of the group of solutions of NaOH, KOH, HCL and HNO₃ in water, such that a desired relief structure results,

sputter-deposition of a metallic layer, in particular a Nickel layer,

galvanically growing the sputter-deposited layer to the desired thickness forming a stamper,

separating the master substrate from the stamper.

19. (Previously Presented) A method as claimed in claim 18 using a master substrate as claimed in claim 1, the information layer having a thickness in the range 5-35 nm wherein a pre-grooved shaped relief structure is formed for replication of write-once and rewritable optical discs.

20. (Currently Amended) A method as claimed in claim 18, in which the developer solution is used in a concentration 1-30%, ~~preferably between 2 and 20%.~~

21. (Previously Presented) A pre-recorded optical disc replicated with the stamper manufactured with the method of claim 18, wherein the relief structure on the stamper surface comprises shortest pits having a typical crescent and longer pits having a swallow-shaped trailing edge and that the relief structure is replicated in the optical disc.

22. (New) A master substrate as claimed in claim 12, wherein said interface layer comprises an organic layer made from hexandioldiacrylate (HDDA).

23. (New) A method as claimed in claim 20, in which the developer solution is used in a concentration between 2 and 20%.

24. (New) A master substrate as claimed in claim 1, wherein said second interface layer has a thickness between between 15 and 50 nm.

25. (New) A master substrate as claimed in claim 1, wherein said protection layer has a thickness between between 5 and 30 nm.

26. (New) A master substrate as claimed in claim 1, wherein said first interface layer has a thickness in the range between 20 and 70 nm.

27. (New) A master substrate as claimed in claim 1, wherein said recording material has a composition of $\text{Sn}_{18.3} - \text{Ge}_{12.6} - \text{Sb}_{69.2}$.
28. (New) A master substrate as claimed in claim 1, wherein said recording material is Sb_2Te doped with Ge and In.
29. (New) A master substrate as claimed in claim 1, wherein said information layer has a thickness in the range from between 5 and 40 nm.
30. (New) A master substrate as claimed in claim 1, wherein said information layer has a thickness in the range from between 45 and 70 nm.
31. (New) A master substrate as claimed in claim 1, wherein said protection layer comprises an organic material, in particular selected from the group of soluble organic materials, like PMMA.